Summary of April 20th class:

Progress on projects was reviewed.

Introduced the Finite Volume Method:

The heat flow differential equation is integrated to reduce the differential equation to a linear differential equation.

Discrete elements are defined with the value defined at the center of the element and the fluxes defined at the boundaries. The discrete equations were derived assuming a piecewise linear function for the value and step functions for the source and diffusion coefficient.

Other approximations for the shape of the functions could be used. The resulting equations should not violate the following rules:

1. Consistency at control-volume faces: Fluxes are the same.
2. Positive coefficients when put in the form of only central point temperature variable on the left.
3. Negative slope linearization of the source term.
4. For differential equations: sum of neighbor coefficients should equal central coefficient because F(T) = F(T+c)